



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

BULLETIN

OF

THE PENNSYLVANIA MUSEUM

JULY, 1915

THIRTEENTH YEAR

Number 51

MOSAIC AND MILLEFIORI GLASS

A loan collection of millefiori and flowered glass paperweights, on exhibition in the Museum, has attracted much attention because they recall to the majority of visitors similar ornaments, which they can remember having seen in their own homes. This exhibit not only consists of examples of finished variegated glass objects, such as paperweights, cologne bottles, mirror knobs and marbles, but illustrates the processes of manufacture which are a revival of an old Roman art.

Millefiori glass derives its name from its resemblance to a bouquet or cluster of brightly colored blossoms, the meaning of the word being "a thousand flowers." It is formed by arranging side by side and fusing together small glass rods, or filigree canes, of different designs and colors, and from the mass cutting thin transverse or diagonal slices or sheets which may be bent into the forms of saucers, bowls and other objects, or used in the manner of inserts or tiles for covering walls.

Mosaic glass is the highest development of millefiori glass and was carried to considerable perfection by the ancient Egyptians, and later by the Romans. Winckelmann, in "The History of Ancient Art" (Translated by G. Henry Lodge, M.D., Boston, Osgood & Co., 1872, Vol. I, p. 220), describes some remarkable examples of this character:

"In the composite variegated kind of glass, two small pieces which came to light in Rome a few years ago (1765) display a skill that is truly amazing; neither of them is quite an inch long, or a third of an inch broad. One of them exhibits on a dark, variegated ground a bird, resembling a duck, of different and very lively colors, but painted more after the Chinese manner. The outline is firm and sharp; the colors are beautiful and pure, and of very brilliant effect, because the artist has introduced, as the places required it, sometimes translucent and sometimes opaque glass. The most delicate pencil of the miniature-painter could not have expressed more accurately the circle of the eyeball, and the visibly overlapping feathers on the breast and wings. The fragment is broken off just back of the commencement of the wings. But this piece excites the greatest astonishment in the spectator when, on looking at the other side of it, he sees the very same bird, without being able to detect

any difference in the minutest particular. Hence, we must conclude that the figure of the bird extends through the whole thickness of the glass.

"The painting had been made by placing threads of glass of different colors in contact with each other, and melting them into union. It is not to be supposed that so much labor would have been expended merely in continuing this image through a thickness so inconsiderable as one-sixth of an inch, when it was equally easy to obtain the same effect in the same time, by means of longer threads, through a thickness of many inches. Hence we may conclude that this fragment was a slice from a thicker piece of glass, through which the picture was carried, and that the image could be multiplied just as often as the thickness of the fragment mentioned was contained in the thickness of the piece from which it was separated.

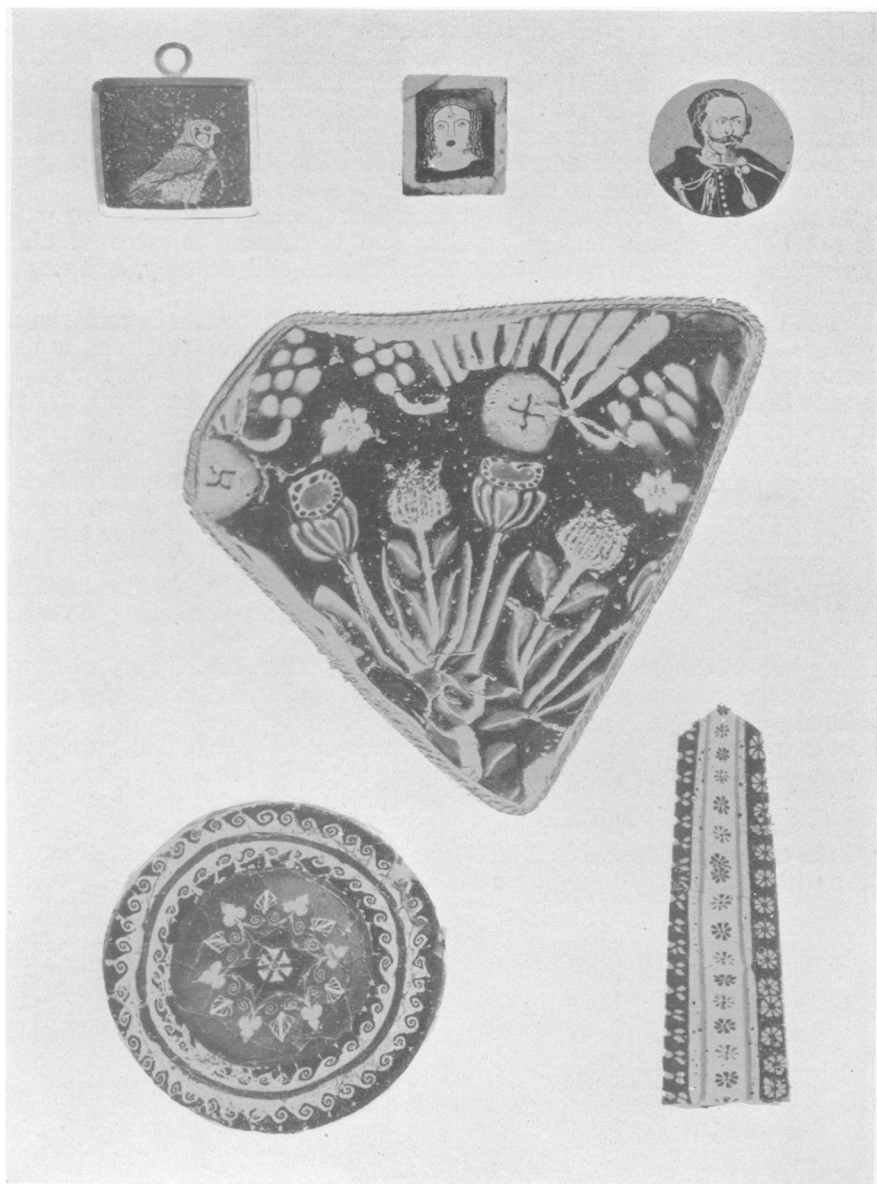
"The second fragment, which is of about the same size, is prepared in precisely the same way. On it are ornaments in green, yellow, and white, consisting of scrolls, beads, and flowerets, which are represented on a blue ground, and run together so as to form pyramids. The whole is very clear and distinct, and still so infinitely small that even a keen eye finds a difficulty in following the extremely fine ends in which the scrolls terminate; and yet, notwithstanding, all these delicate ornaments are continued uninterrupted, through the entire thickness of the fragment.

"Now, as glass can be drawn out into threads of any length, and of exceeding fineness, and with equal facility, even when many glass tubes are placed together, and then melted, their relative position not being changed in drawing, . . . it is rendered probable that, in such manufactures of glass, larger tubes were reduced, by drawing, to tubes of exceeding fineness."

Referring to these specimens, Sir I. Gardner Wilkinson, in "The Manners and Customs of the Ancient Egyptians" (New York, 1879, Vol. II, p. 145), writes:

"The glass described by Winckelmann is of the later Ptolemaic, or Roman period, and was not made by the Egyptians at an older period. It was produced chiefly at Alexandria, and used for small objects, and similar specimens are not uncommonly found at Rome, which was supplied with glass from Egypt. This kind was made in cylindrical or square rods, the glass being arranged in patterns vertically, and horizontal sections taken which had the pattern on each side."

Keysler, writing in the early part of the eighteenth century, describes a somewhat similar method of reproducing in tinted glass the original paintings on canvas or wood which in some of the Roman churches were rapidly disappearing before the ravages of dampness and age. "The materials used are little pieces of glass, of all the different shades in every tint or color like those of the fine English worsted used in needle-work. The glass is first cast into thin cakes, which are afterwards cut into long pieces of different thickness. Many of the pieces used in the works on roofs and ceilings, which are, consequently, seen only at a great distance, appear to be a finger's breadth; but the finer works consist only of glass pins, if I may call them so, not thicker than a common sewing needle, so that a portrait of four feet square shall take up two millions of such pins or studs. These are so closely joined together,



MOSAIC GLASS
In the British Museum

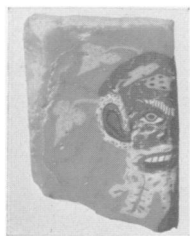
that, after the piece is polished, it can hardly be discerned to be glass, but rather looks like a picture painted with the finest colors. The ground on which these vitreous pieces are inlaid is a paste compounded of calcined marble, fine sand, gum tragacanth, white of eggs, and oil; it is at first so soft that the pieces are easily inserted, and upon any oversight may be taken out again, and the paste new moulded for the admission of other pins; but by degrees it grows as hard as a stone, so that no impression can be made on the work.

"This paste is spread within a wooden frame, which for the larger pieces must not be less than a foot in breadth and thickness. A piece of about eighty square feet, if performed with tolerable care and delicacy, will employ eight artists for two years.

"The pins of the several colors lie ready before the artists in cases, as the letters are laid before the compositors in a printing-house; and such is their accuracy in imitating the finest strokes of the pencil, that the only apparent difference betwixt the original painting and such a copy is, that the latter has a much finer lustre, and the colors are more vivid."

Mr. R. L. Hobson has furnished the writer photographs of several fine examples of ancient Roman mosaic and millefiori glass from the collection in the British Museum (see full-page plate). One of the former represents the figure of a hawk; another the head of a Roman lady, while a larger fragment shows, among other details, such as madrepora or coralline devices, a cluster of flowers and seed pods of the lotus plant. Of millefiori glass two examples reproduced in the same plate are of particular interest as illustrating the condition of the glass-workers' art in the early years of the Christian era. The long, slender piece is decorated with star-like flowers in various colors, while the circular design reveals the source from which the nineteenth century makers of colored paperweights derived their inspiration.

In Egypt some of the Alexandrian productions of the Græco-Roman period illustrate the beginning of the art of picture working in stained glass. Two examples in the collection of Mr. Charles L. Freer, of Detroit, Mich., are among the most remarkable of their kind which have come to light. One of these is a bar three and a half inches in length and a little over an inch in height and width, which contains through its entire length parallel threads of colored

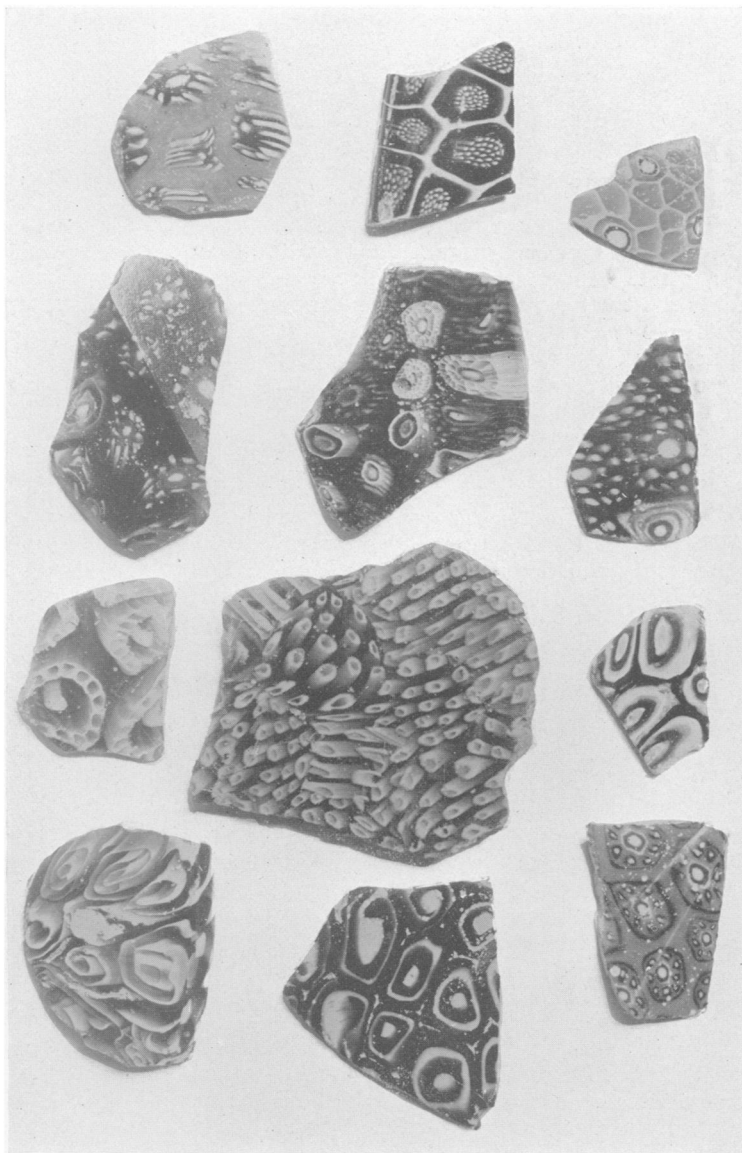


HEAD OF SILENUS



SACRED BULL OF EGYPT

Examples of Ancient Egyptian Mosaic Glass
In the Collection of Mr. Charles L. Freer



MADREPORE AND MILLEFIORI GLASS
Ancient Roman
In the Pennsylvania Museum

glass which when cut transversely represent the head of Silenus, or, more properly stated, half of the face, the other half having been broken off and lost. The ground color is deep blue. The face is dark sealing-wax red, while the accurately defined eyeball and teeth are white. Black lines in the mouth, ear and eye serve to accentuate the coloring. The wavy, plaited beard is pale, grayish green, as are also the ivy or grape leaves which spring from the head. Around the ear and in the forehead are millefiori scrolls and rosettes.

The second example, of still earlier date, is Egyptian in design. It consists of a block of glass, almost cubical in form, measuring an inch in width and depth. In the cerulean blue ground the figure of Apis, the sacred bull, stands out distinctly in black and white. The space between the horns is pale grayish green. Beneath the figure is a millefiori ground of floral and foliated ornaments, which are of ochre color on a black field. The broken end at the back shows the identical design, which continues entirely through the piece.

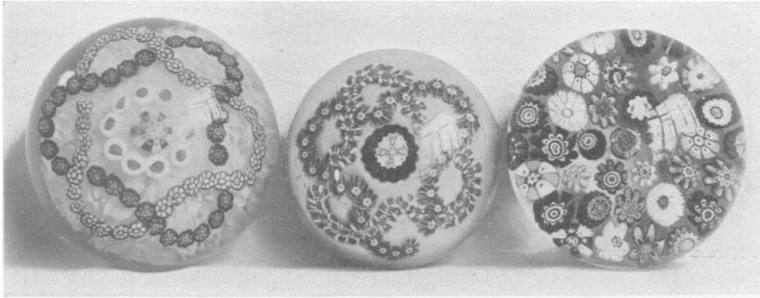
In these specimens we recognize the prototypes of the mosaic and millefiori work which was developed a few centuries later in Italy. While lacking the delicacy of treatment of the later work, they show a breadth and vigor of execution which have not been surpassed in more recent times.

The Venetian or Murano glass-workers revived the ancient Roman art of flowered glass early in the nineteenth century. About the middle of that century, paperweights of this character were extensively produced in Bohemia and Alsace-Lorraine, and about the same time the art was carried to great perfection in France, notably at Baccarat. A few years later, workmen from some of these places found their way to England and the United States and introduced the manufacture in those countries. For a while ornamental paperweights were exceedingly popular, particularly in this country, on account of their bright colorings and pleasing designs. Between 1850 and 1870, a considerable trade in these ornaments was carried on, and in almost every house in the larger cities of the Atlantic states and their vicinities one or more of these objects formed the usual decoration of the writing desk or the corner "whatnot."

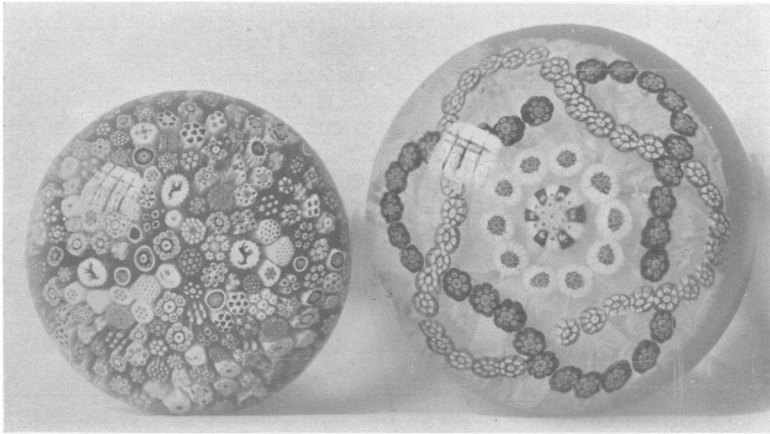
A circular medallion with mosaic portrait of Victor Emmanuel, reproduced from a photograph of a specimen in the British Museum, having been executed in colored glass threads by G. B. Franchini, of Venice, between 1848 and 1852, shows the high degree of perfection to which this branch of the art has been brought in Italy in modern times (see plate).

PREPARATION OF THE RODS AND PROCESSES OF MANUFACTURE

The glass rods used in the preparation of modern millefiori glass are usually made in metal moulds of comparatively large size. The interior may be circular or scalloped. Into one of these moulds ropes of colored glass are arranged in the pattern desired, to which, when liberated, two workmen attach iron rods, one at each end of the mass, and draw it out until it is of the requisite slenderness. The design retains its exact proportions through the entire length and is as perfect in a rod of an eighth of an inch diameter as in the original thick cylinder. If an animal is to be represented the mould is cut into



MILLEFIORI PAPERWEIGHTS
Made at Baccarat, France, 1850-1860



MILLEFIORI PAPERWEIGHTS
Baccarat, France
The one at the left is dated 1847

the exact shape and when the glass is released and drawn out each detail of legs, tail, ears and other parts is uniformly reproduced in solid color so that even in the tiniest representation of the figure every part appears to be perfectly formed. Sometimes a cane will be composed of many threads of various colors and designs, each of which has been formed in this manner, arranged around a central rod and welded together. When the rods are finished they are broken into small pieces, or cut into uniform lengths or into thin slices, according to the sort of paperweight or other object to be made.

Into an iron ring, the size of a paperweight, a cushion of molten glass is dropped and while soft the sections of rods are laid on the surface or stuck

in it side by side in a regular pattern, the tops of the rods being pressed into a rounded or convex form. Over all more of the melted glass is poured and the surface rounded into hemispherical shape by means of a concave spatula of moistened wood. The last process consists in polishing the surface of the curved top and the flat base after the ball has been again heated.

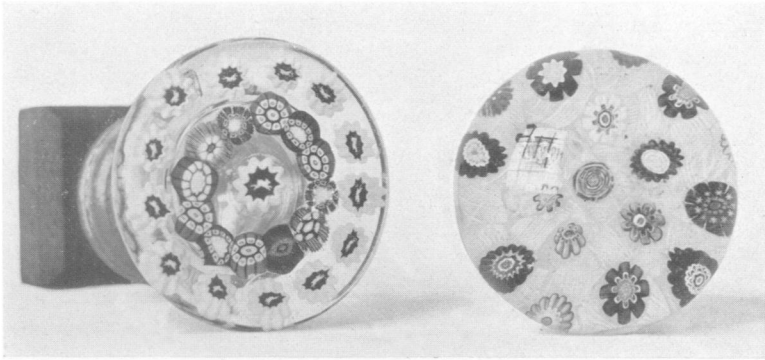
Apsley Pellatt, in his "Curiosities of Glass-Making" (London, 1849, p. 110), describes the manner of making glass mosaic work as follows:

"The Romans, and possibly the Greeks, formed beautiful arabesque and other designs of Mosaic Glass: many of these are of minute and accurate execution, in light colors beautifully harmonized upon a dark ground, formed wholly of threads of glass. They are ranged vertically, side by side, in single threads or masses, agreeably to a prefigured design. When submitted to heat sufficient to fuze the whole, the four sides, at the same time, being pressed together, so as to exclude the air from the interstices of the threads—the result will be a homogeneous thick slab, which, if cut into veneers, at right angles or laterally, will yield a number of slabs or layers of the same uniform design; these, it is supposed, were employed by the ancients in jewellery ornaments. Many specimens may be seen in the British Museum. On this principle were executed the pictures of Mosaic Glass noticed by Winckelmann."

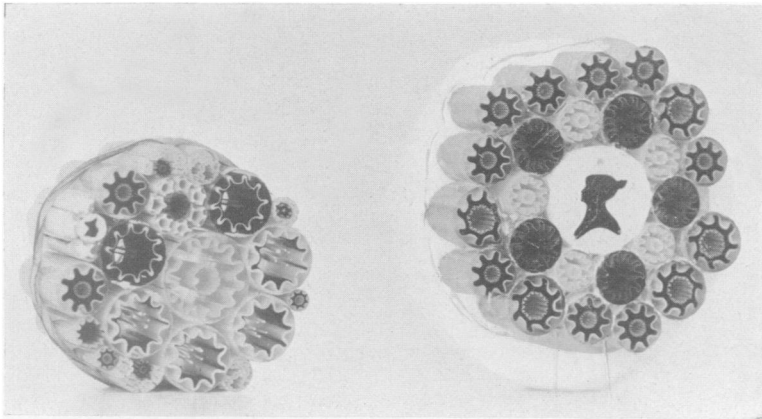
The same writer describes the method employed by the Venetians in millefiori or star work. Sections of glass cut from the ends of tinted filigree canes were arranged in regular or irregular devices in a hollow, double cone of transparent glass. From the top of the curved double case a tube projected, and after the whole was reheated the air was exhausted or sucked out through the open tube by means of a blowing iron. After being rewarmed the case and contents became one homogeneous mass and could be shaped into a tazza, bowl, paperweight or other object.

MILLEFIORI GLASS IN AMERICA

It is not generally known that millefiori glass has been produced in the United States. About the middle of the nineteenth century, millefiori paperweights were brought into this country from St. Louis, Alsace-Lorraine, and from Baccarat, in France, where the finest examples were manufactured. Workmen from these factories found their way to America and some of them, in their spare moments, amused themselves by exercising their skill in this branch of the art and making specimens for themselves and their friends. From them other glass-workers learned the art, and manufacturers in various parts of the country—at East Cambridge and Sandwich, Mass., Pittsburgh and Philadelphia, Pa., and other places—began the production on a limited scale. At first the prepared rods were procured from abroad and glass flowers, ready for use, were brought from Germany, but a little later new designs in filigree canes were made here, and from about 1860 to 1876 a considerable amount of millefiori glass was produced by domestic concerns. Walking canes, bureau and mirror knobs, marbles and cologne bottles with stoppers, were also produced to some extent, many of them equaling in beauty and intricacy of patterns the similar products of the older European factories. At the Cen-



MIRROR KNOB AND PAPERWEIGHT
From Baccarat, France
Figures of Rabbits in the Former



CUT SECTIONS OF MILLEFIORI RODS
Cut and grouped for insertion in Paperweights
Silhouette of Queen Victoria in Center
From the Gillinder Glass Works, Philadelphia

ennial Exhibition, in the latter year, W. T. Gillinder produced at his branch works on the exhibition grounds large numbers of paperweights which found a ready sale as souvenirs of American skill in glassmaking.

Frank Pierre, of the New England Glass Factory, a Frenchman, made paperweights and other fancy articles of colored glass about 1853, as stated by Mr. Andrew Long of East Cambridge, Mass., who worked there at the same time.

Mr. William F. Dorflinger informs the writer that the St. Louis Glass Works, of Alsace-Lorraine, were the first to make paperweights with colored designs, about 1840. About 1867 some of the workmen from those works came to the Dorflinger Glass Works, and much colored glass was produced there during the following two years. Among the objects made were stoppers for cologne bottles, paperweights, seals and other objects. The colored glass was drawn from the pot into cane and from the cane the flowers were made on a lamp and afterwards pressed or worked into the crystal pieces.

D. J. Crowley, connected for many years with the Libbey Glass Company, of Toledo, Ohio, began work at the New England Glass Factory in 1869, and remembers distinctly that millefiori paperweights were made there by a glass-worker whose name was John Hopkins.

Mr. Edward Drummond Libbey, president of the Libbey Glass Company, has stated to the writer that when he was a young man in the employ of the New England Glass Company, in the fifties or sixties, a large business was carried on in the manufacture and sale of glass paperweights until 1874, when the manufacture of this variety of glass was discontinued. Many metal moulds for making the filigree rods were in use, which included multi-colored designs of flowers, stars, scrolls, animals, letters and figures, from which an infinite number of combinations could be obtained.

E. A. B.



SOME RECENT ACCESSIONS

A GILDED WOODEN STATUE OF THE ITALIAN RENAISSANCE

By purchase, the Pennsylvania Museum has recently obtained a fine wooden statue of a saint, which is now one of the most attractive features of the exhibit under the dome at Memorial Hall. It was purchased as a St. Francis of Assisi, but while clad in a monk's robe, the fact that the saint carries a missal and that he does not wear the knotted cord, which seems an inseparable insignium of St. Francis and his order, makes the identity of the personage represented doubtful, as there are several saints who are commonly represented holding a book, and this is the only truly characteristic feature of our statue. There is reason to believe that the head was supplied either with a halo or with a mitre, which has disappeared. At least, the sharp edges of the tonsure, where the missing head-piece rested, as well as the relative roughness of the top surface of the head, invite such a conclusion.

The entire figure is covered with gold, with the exception of the head and hands which probably originally were of flesh color but which have darkened with age and probably also with successive painters' attempts at matching the darkening surfaces. The left foot has been restored. A band of conventional ornamental design edges the robe and is repeated around the pedestal. The latter, however, has the appearance of having been touched up, as it is so much clearer than that on the statue.